



Local seismic tomography velocity and attenuation structure and joint interpretation

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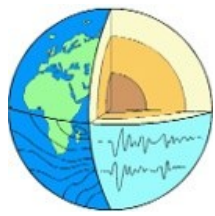
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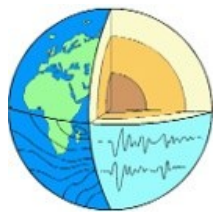
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Local seismic tomography velocity and attenuation structure and joint interpretation

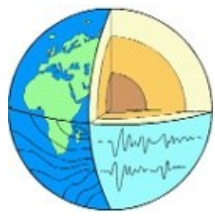
Stage 1 : Catalogues and Phase Picking

S.Mousavi, M. Korn, D. Rößler, K. Bauer



Out line:

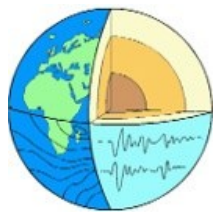
- *Outlook on stages of project*
- *Data sources and Catalogue*
- *Phase picking*



Main Goals

Image and identify fluid path by:

- 1- structural image of P- and S-velocities
- 2- structural image of seismic attenuation and to separate scattering and intrinsic attenuation

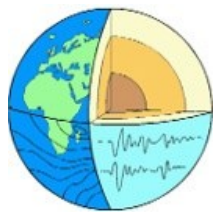


Short over view on whole process

Stage 1: Preparation of the database and travel time picking

Stage2:

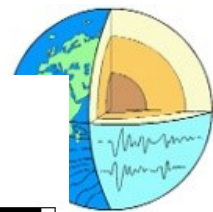
- I)** Determination of one representative 1D model hypocenter locations for the whole region as a starting model of the 3D inversion. The program **VELEST** will be used.
- II)** Inversion for a 3D model
The associated package **SIMULPS/SIMUL2000** is of common use in local earthquake tomography.
A damped least-squares algorithm for joint inversion for 3D seismic velocity structure (v_p , v_p/v_s) and hypocenter locations will be applied.



Stage 3: Seismic attenuation structure

Tomographic inversion of direct P wave spectral decay parameter t^* for seismic attenuation structure will be done.

Stage 4: Joint interpretation of the results



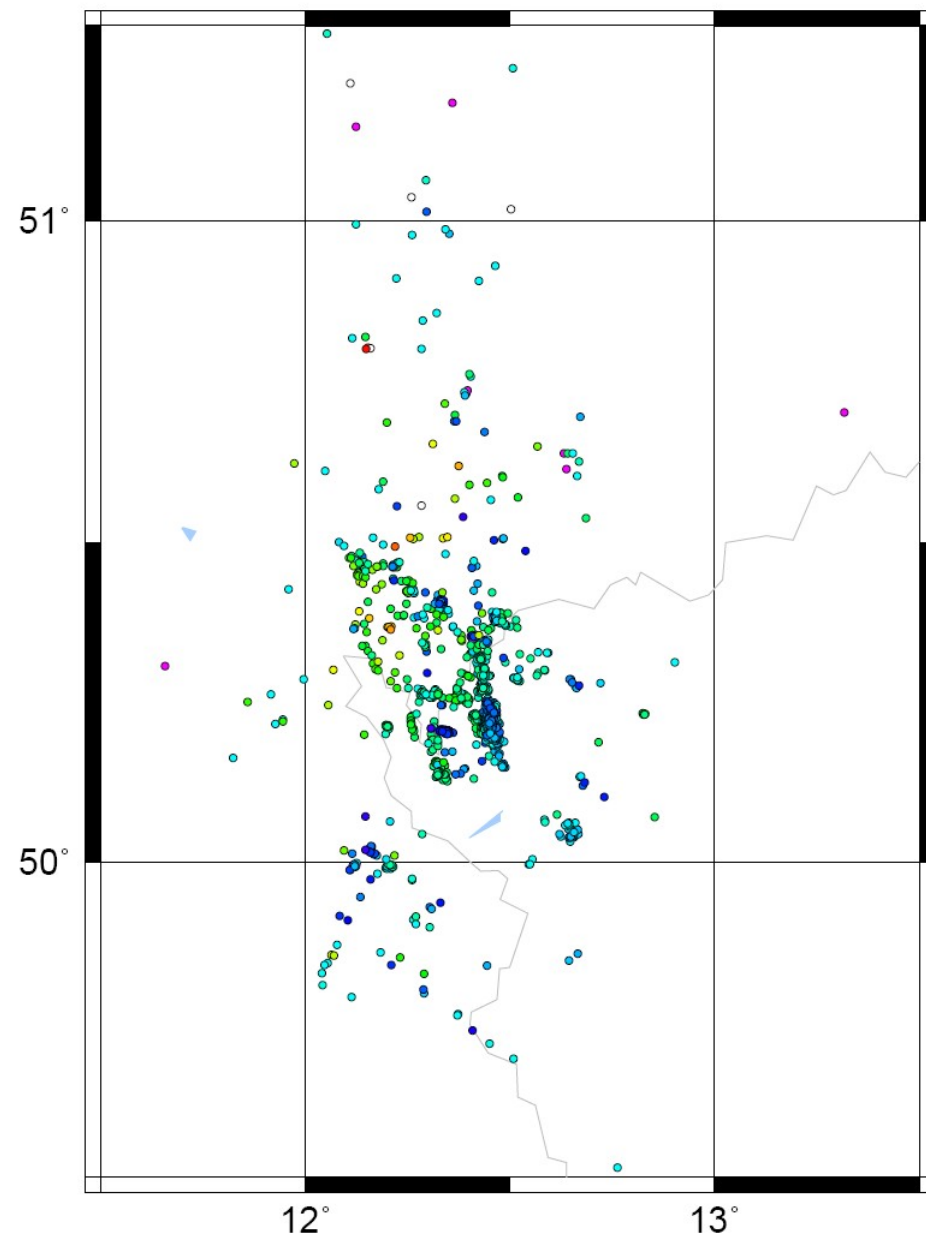
Data base 2001-2008

The list of data consists of 7871 earthquake

<i>Lat</i>	<i>Lon</i>	<i>depth</i>	<i>num</i>	<i>mag(max)</i>
50.199	12.458	9850	315	1.4
50.199	12.458	10340	200	1.8
50.207	12.445	10190	248	2.2
50.207	12.451	9280	320	2.5
50.204	12.462	8680	111	2.4
50.213	12.447	9380	576	3.8
50.214	12.444	10130	462	2.7
50.215	12.453	9840	148	2.4
50.21	12.451	10810	118	2.7
50.209	12.452	10790	566	2.1

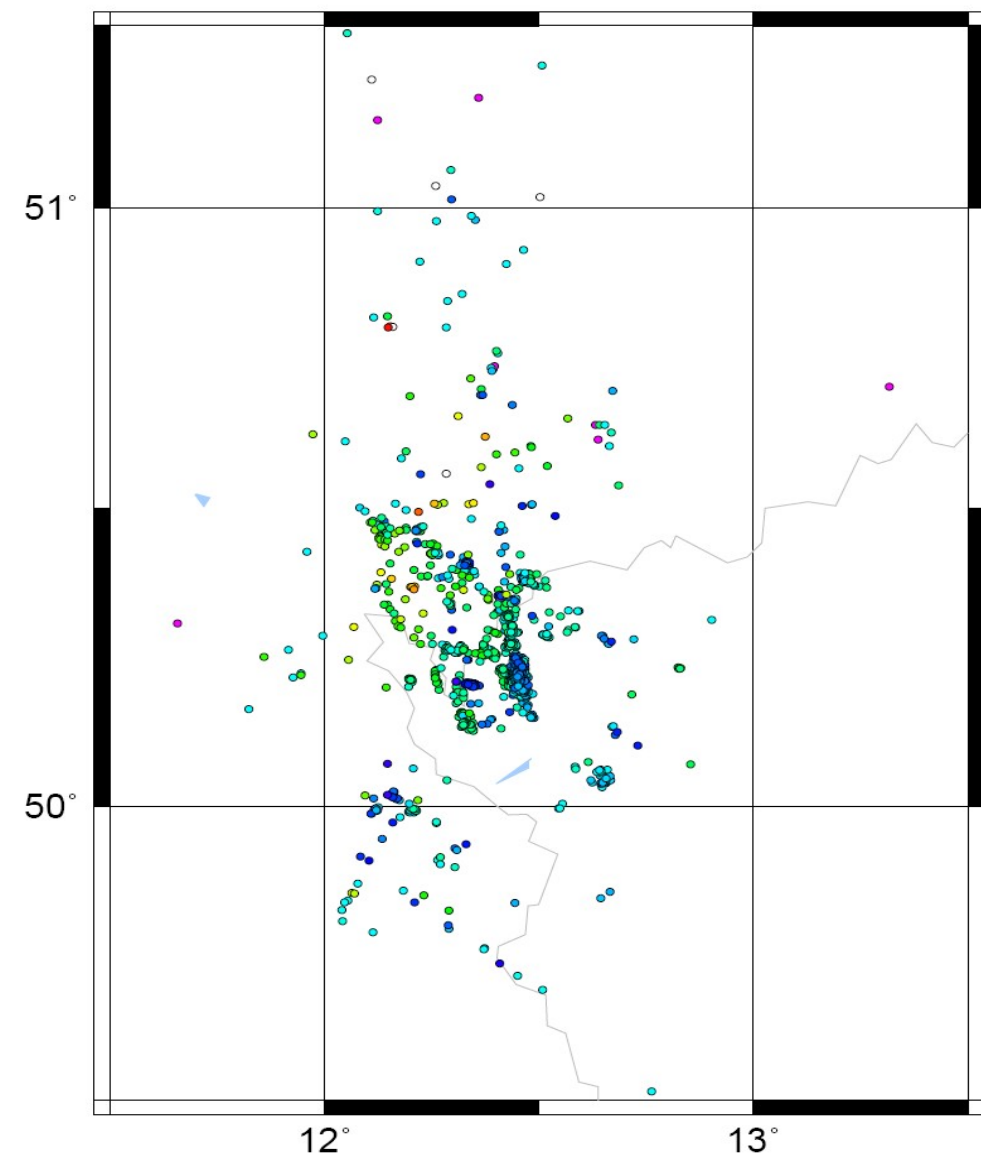
The surface along latitude and longitude has been divided to 0.01 degree grid steps and in the depth to 1km grids So the largest earthquake in each cube has been selected and the rest of earthquakes with similar characteristics omitted.

All Events



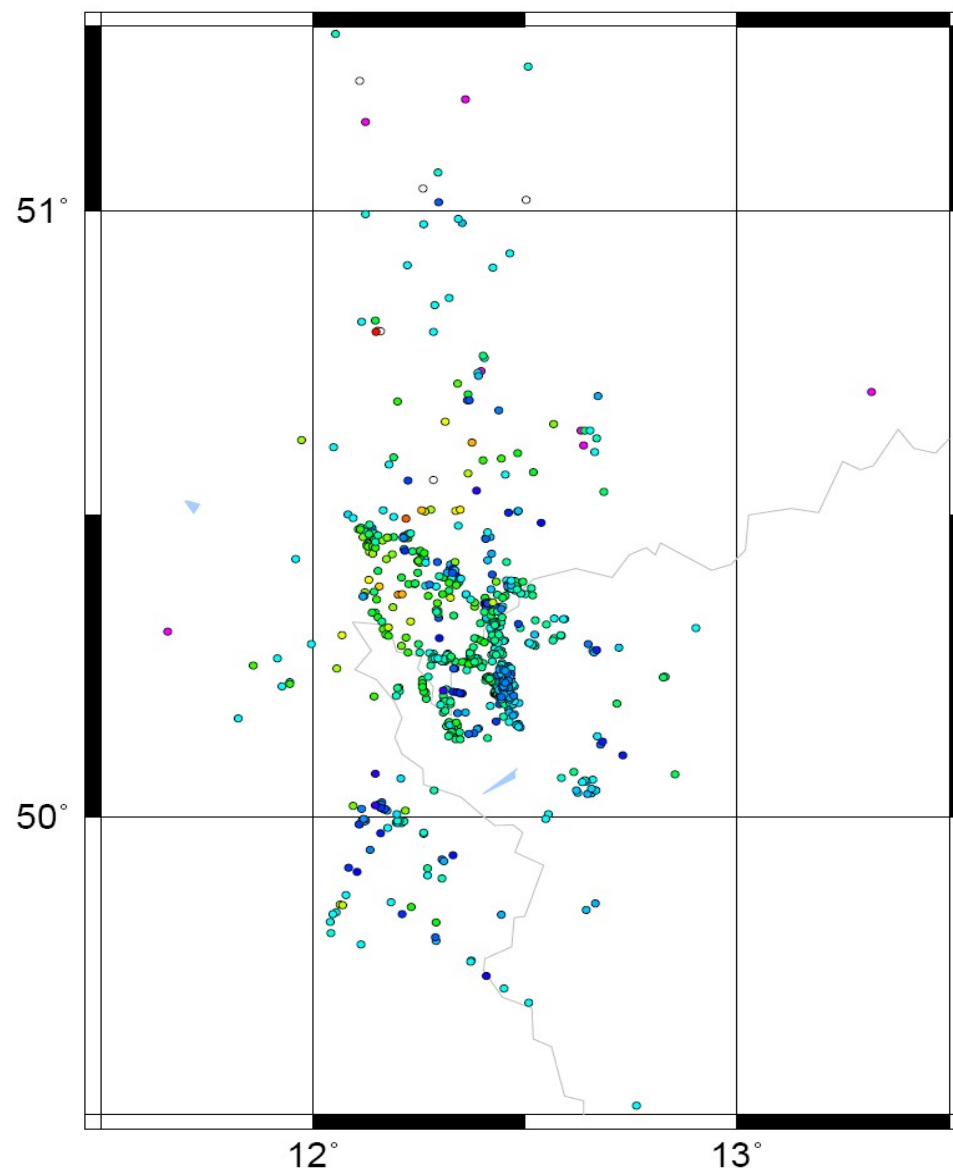
7871 events

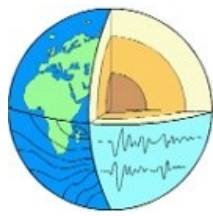
All Events



700 events

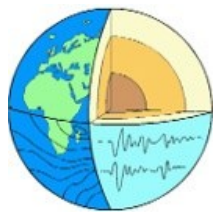
Selected Events



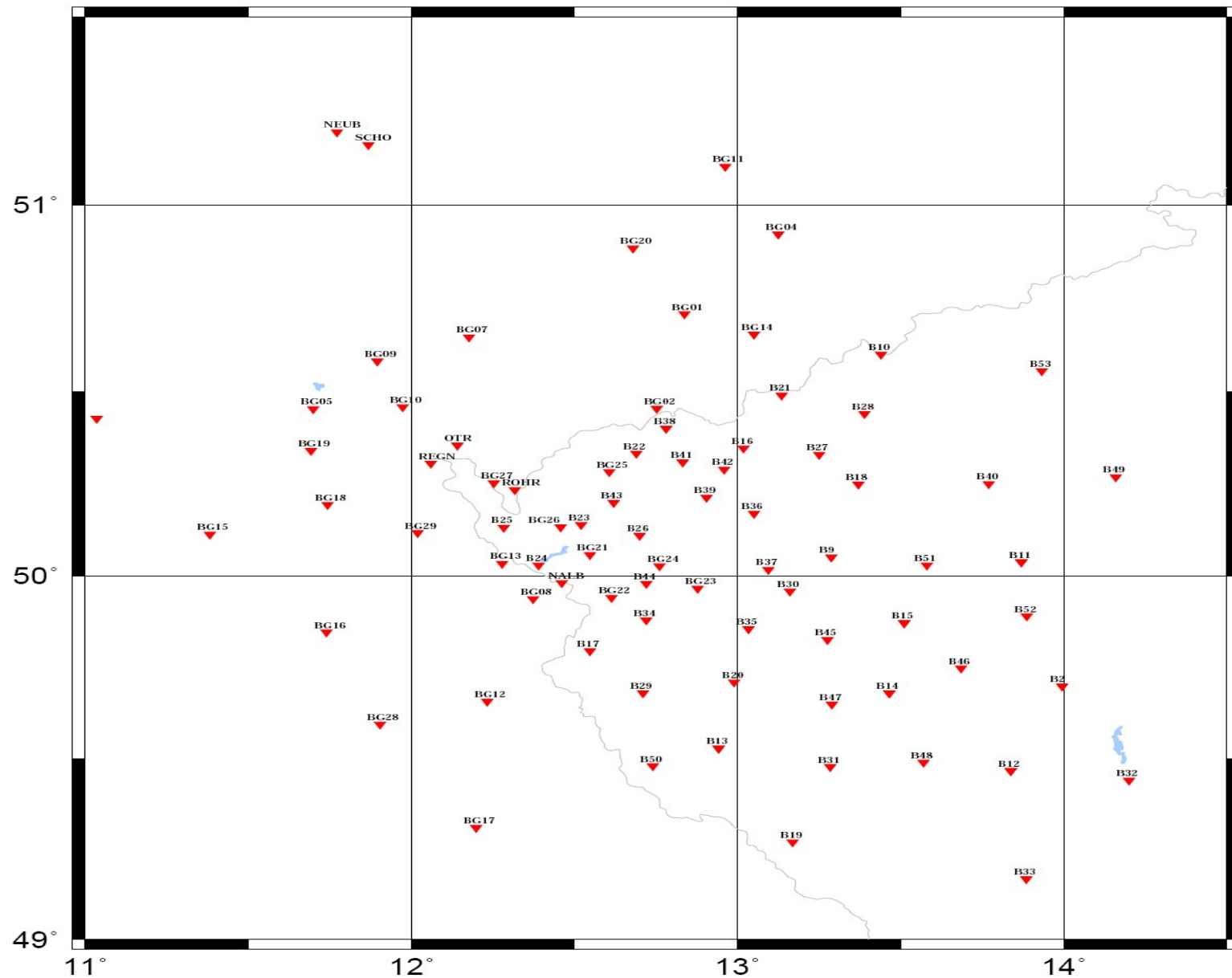


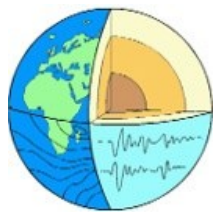
Data sources

2000	2001-2003	2006-2008
Potsdam	Potsdam	Potsdam(10/2008 – 3/2009)
SXNET	SXNET	SXNET
WEBNET	BAYERNNETZ	WEBNET
GRSN	GRSN	BAYERNNETZ
KRASNET	BOHEMA	GRSN
BAYERNNETZ		PASSEQ

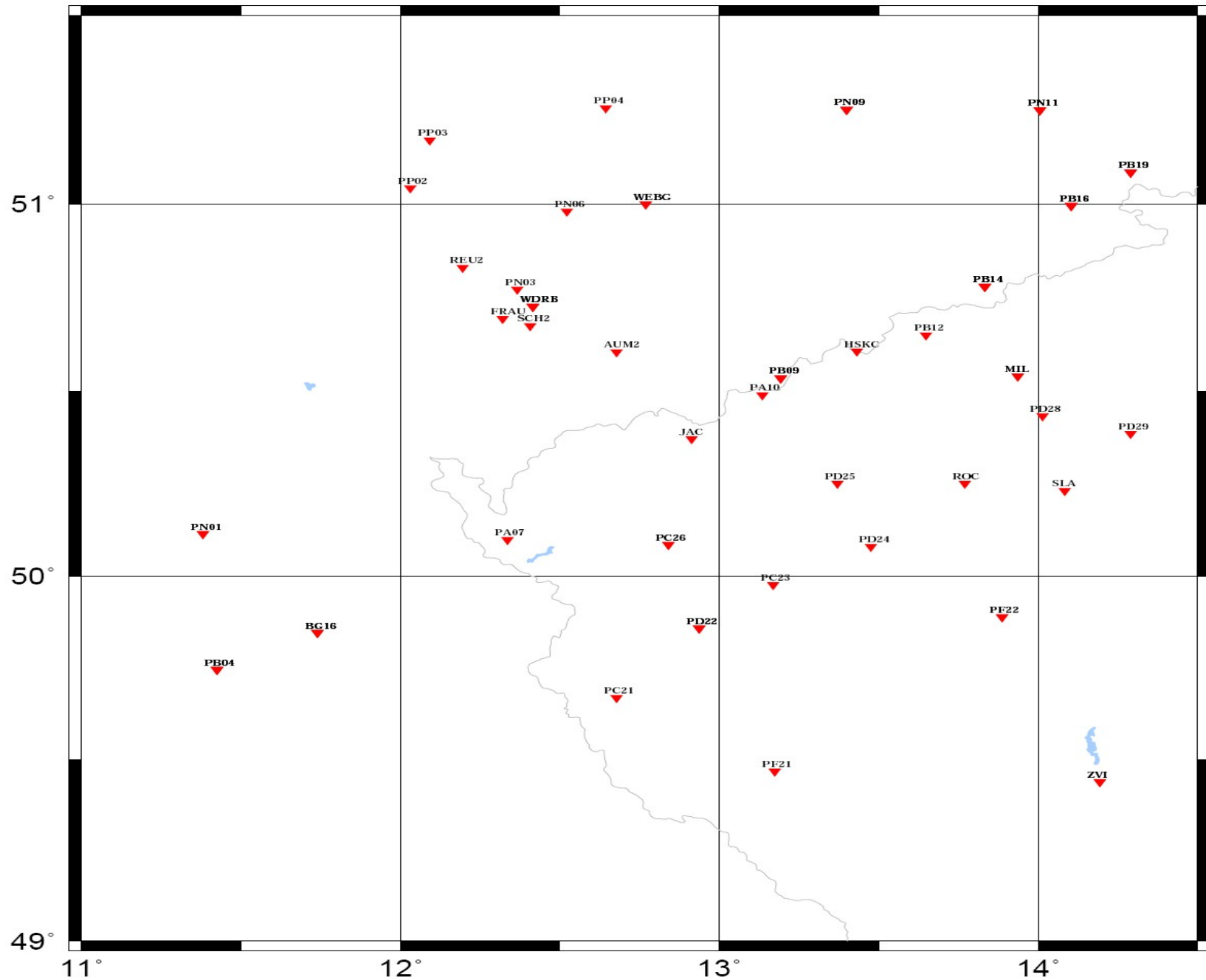


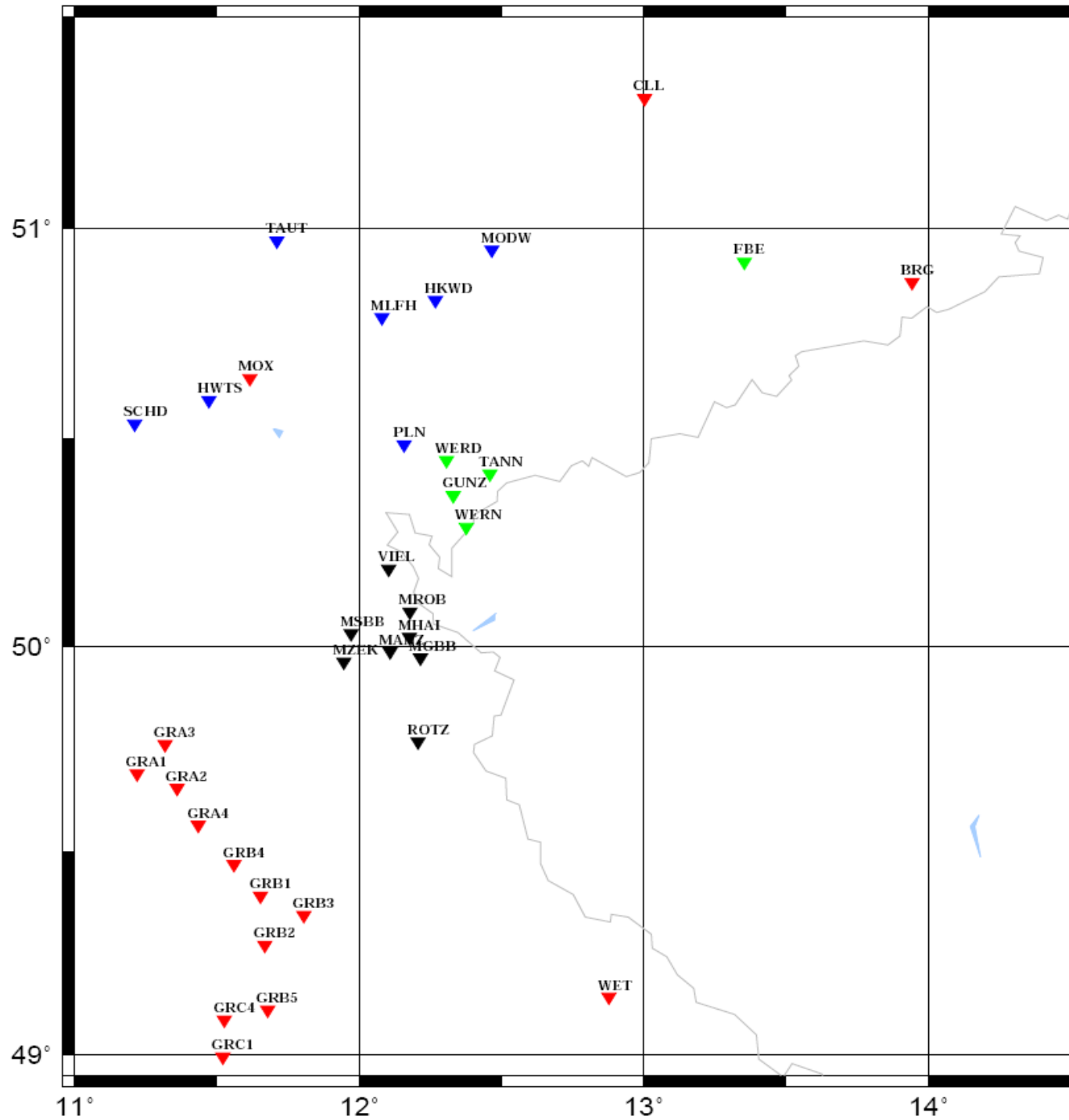
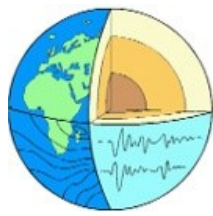
BOHEMA Project, BH network station

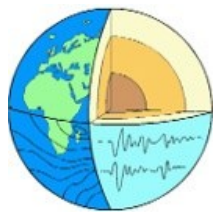




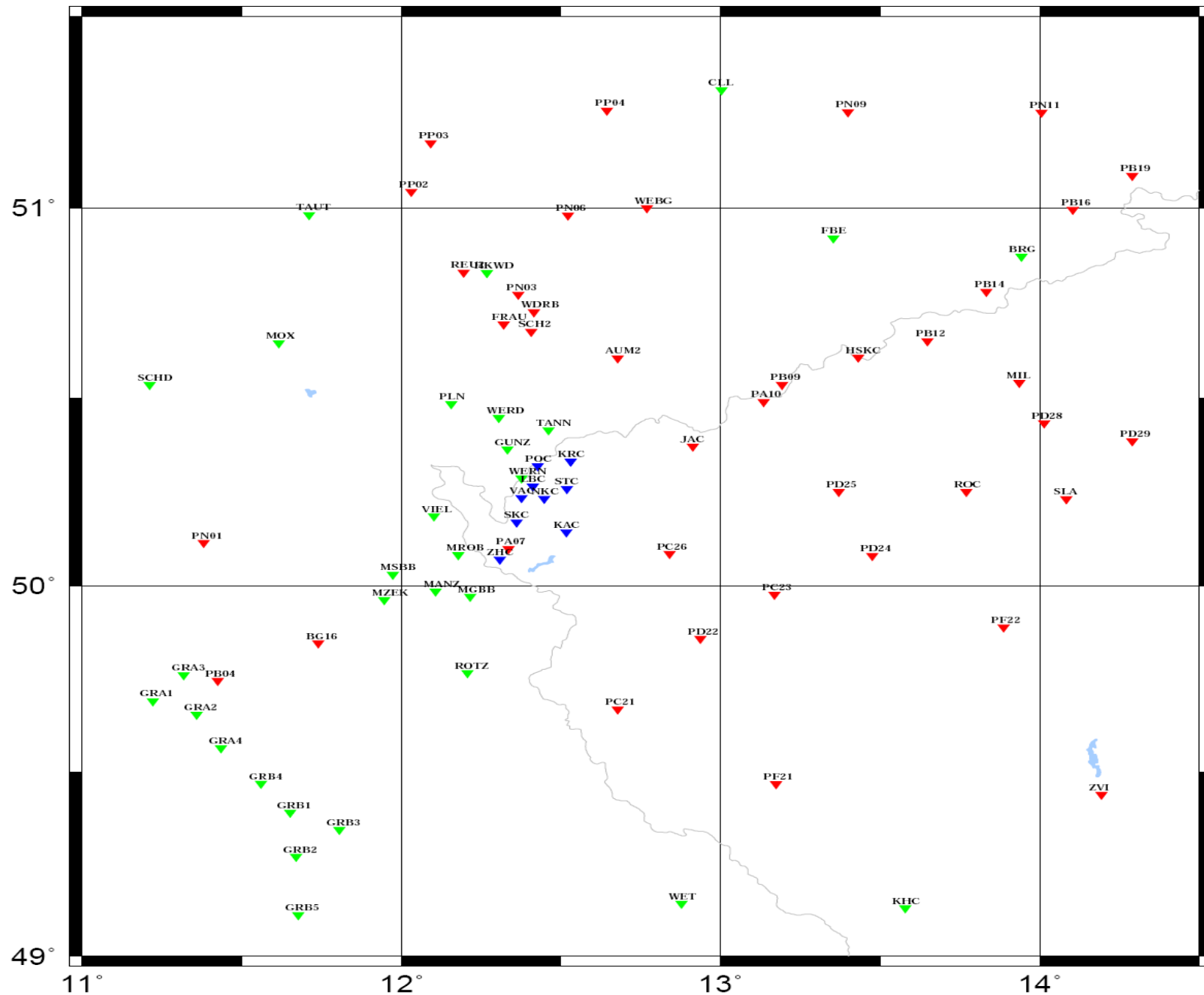
PASSEQ Project, PQ network station

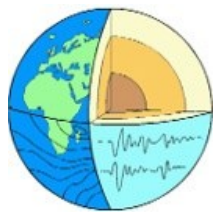






PASSEQ network, WEBNET network and other permanent stations

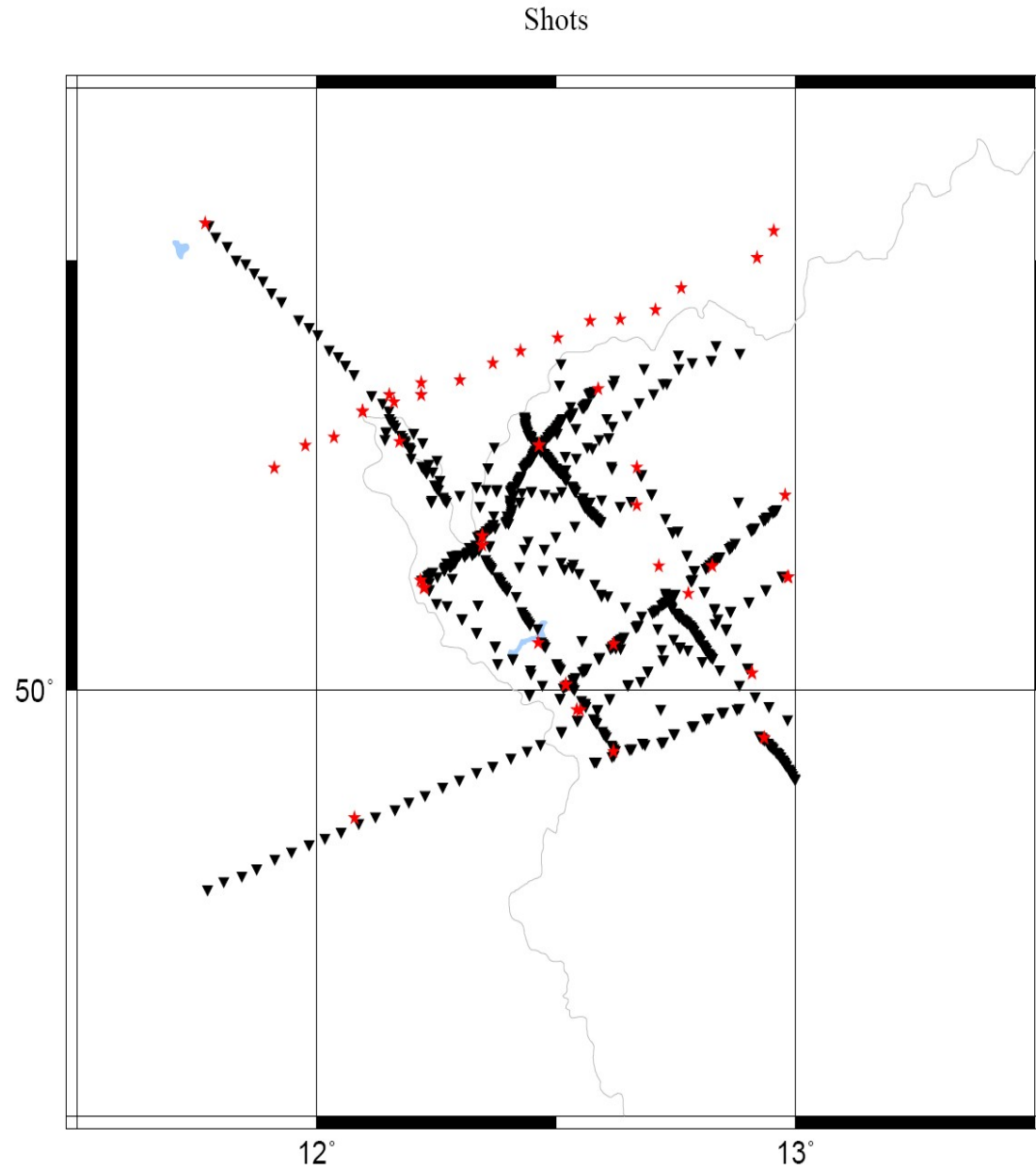


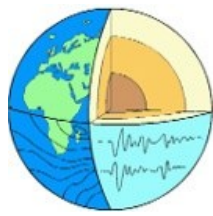


49 shots

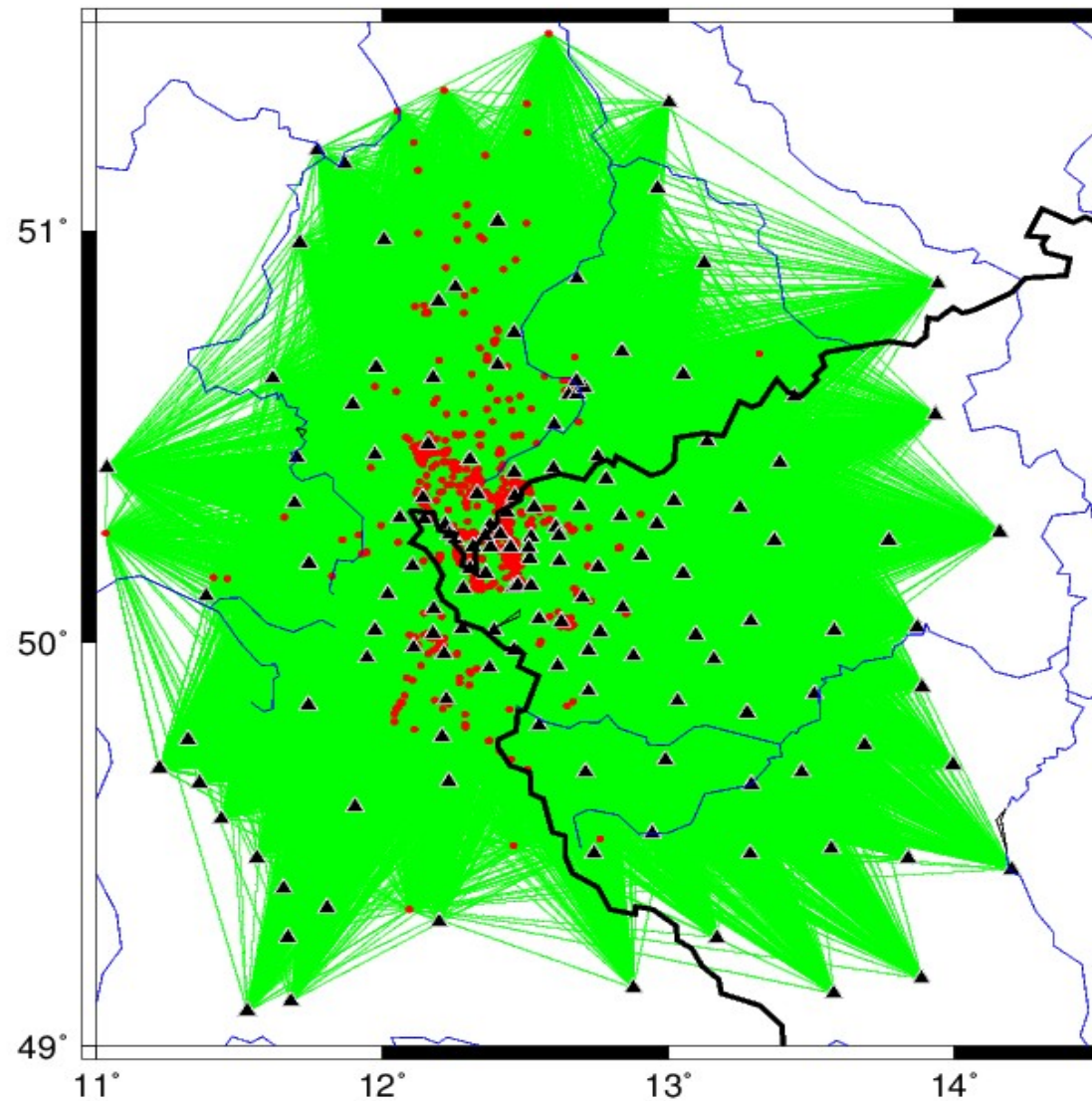
682 Stations

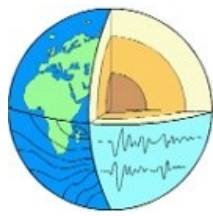
2000/01/01



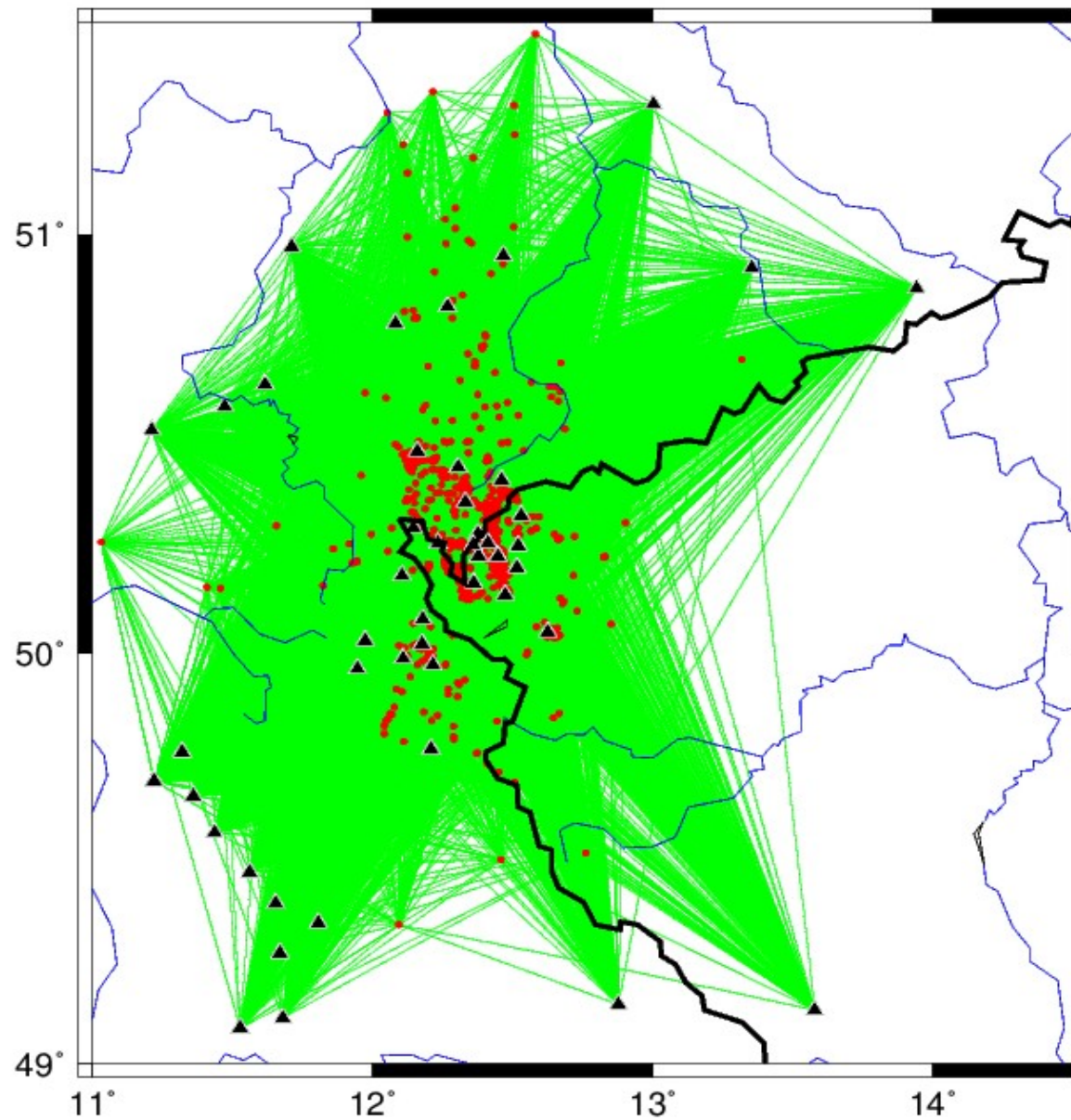


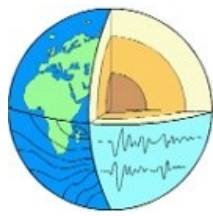
Ray coverage for all events during 2001-2008 for all stations





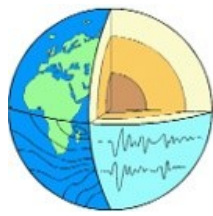
Ray coverage for all of the events of 2001-2008 for the stations which their data set are available



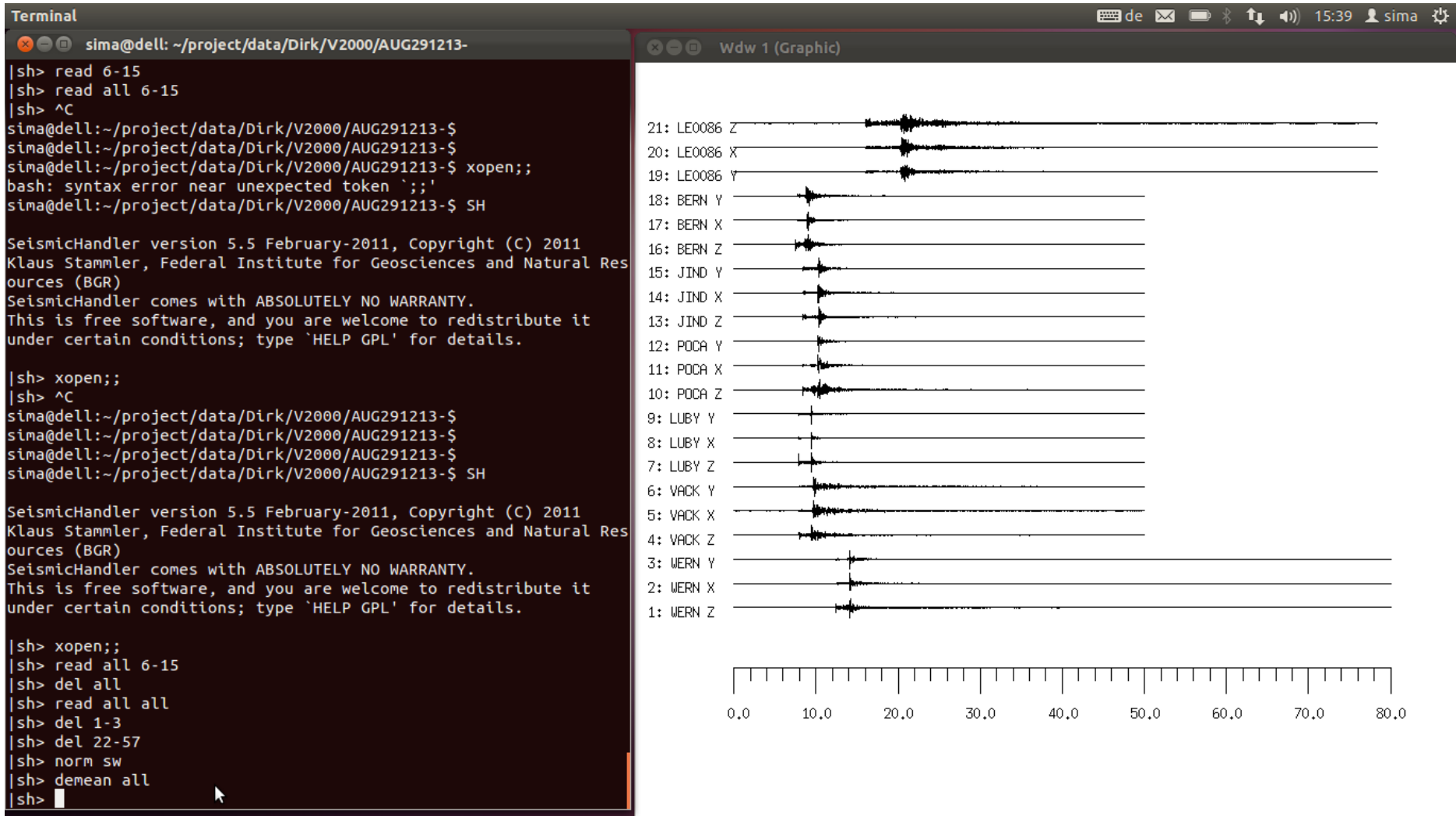


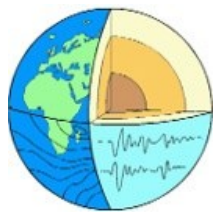
Phase picking

Seismic handler

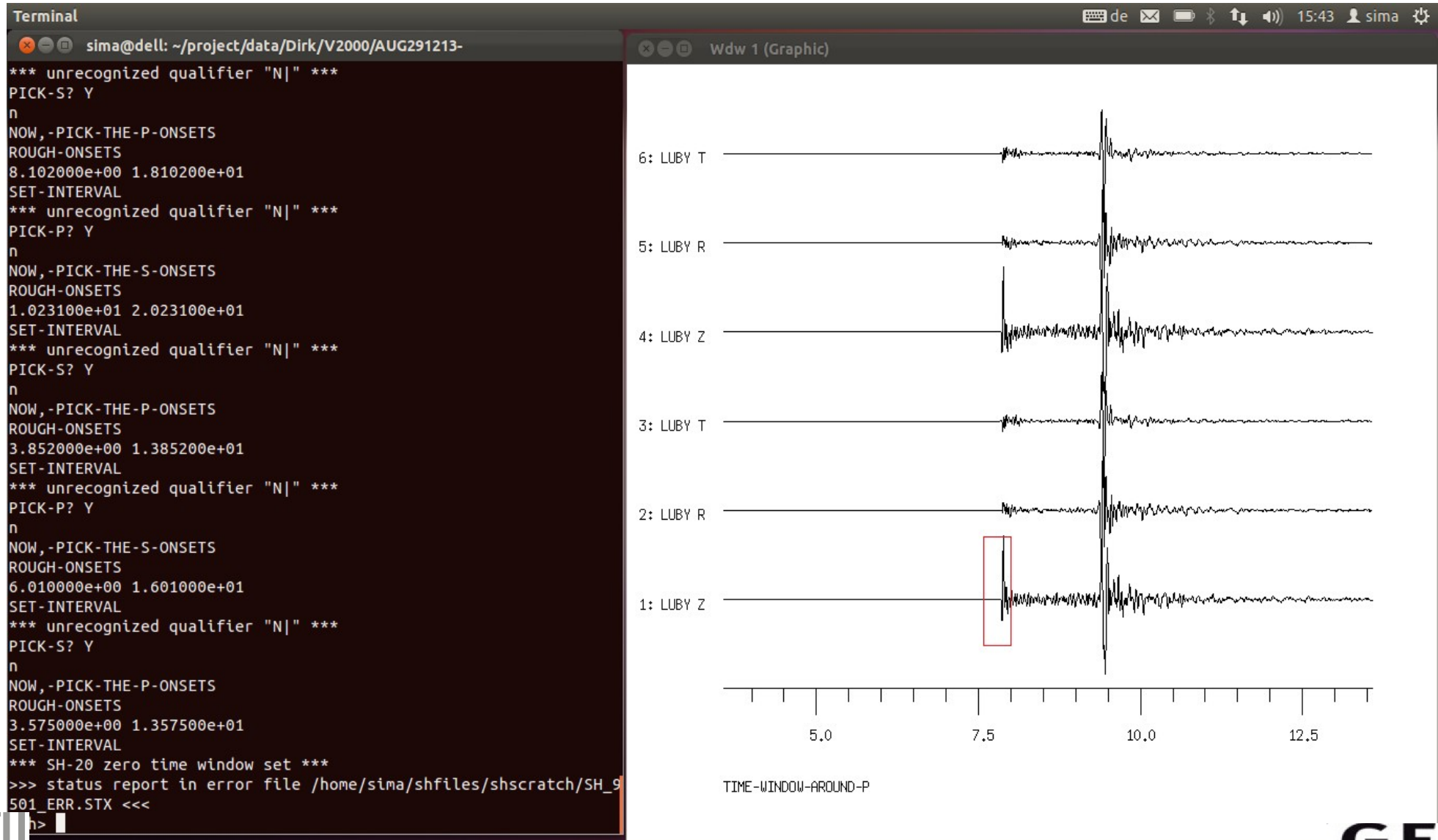


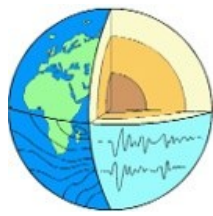
29-AUG-2000_12:13:15.67



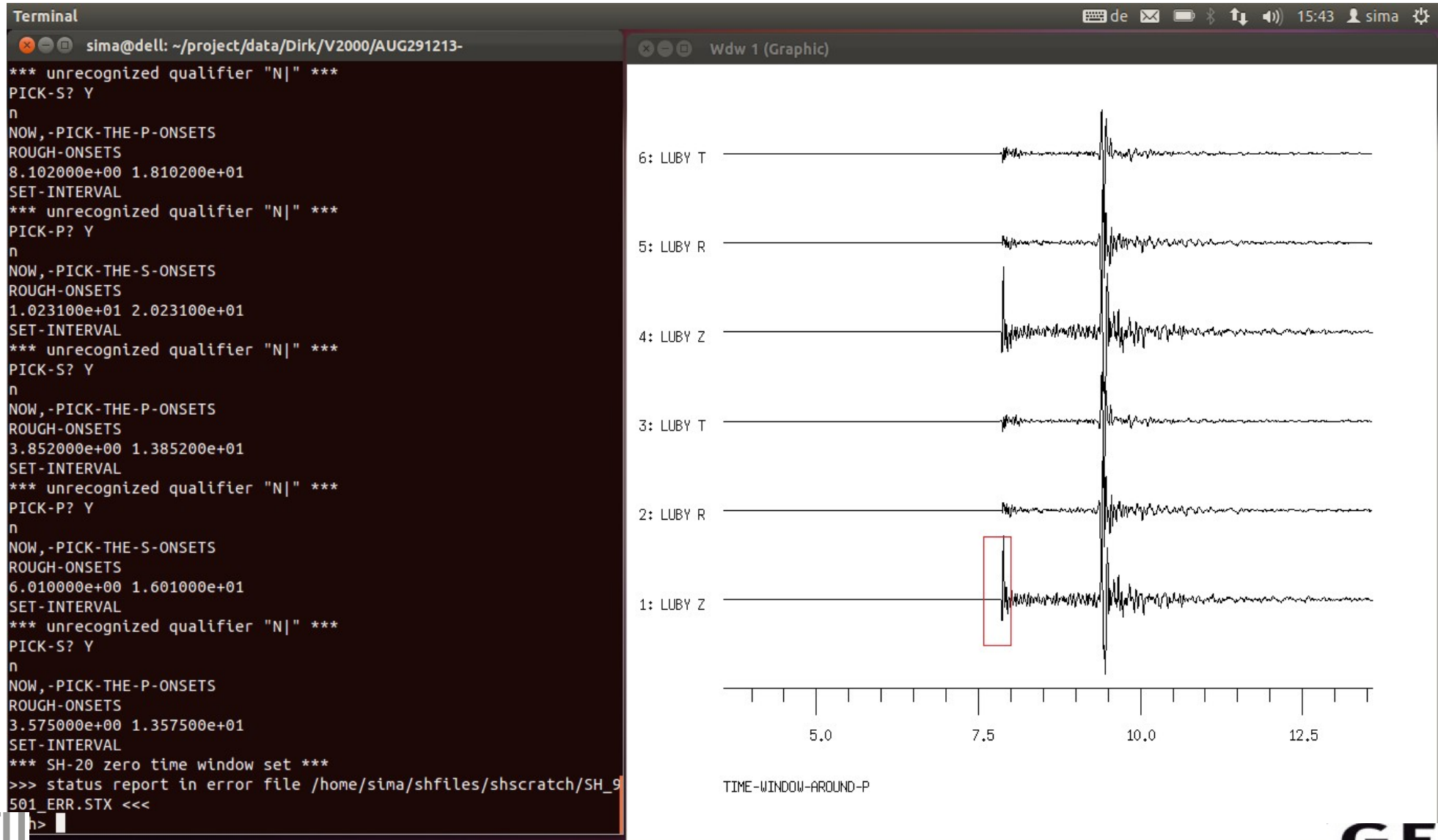


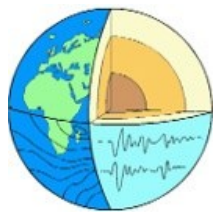
LUBY lat: 50.26020 lon: 12.35920





LUBY lat: 50.26020 lon: 12.35920



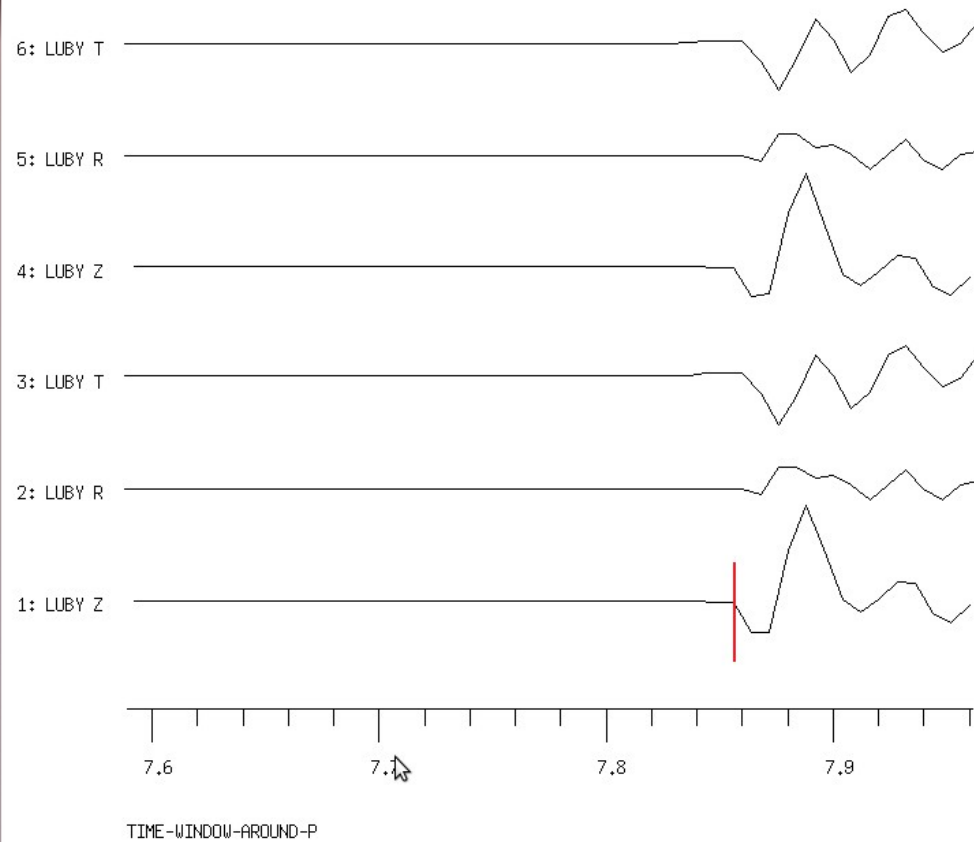


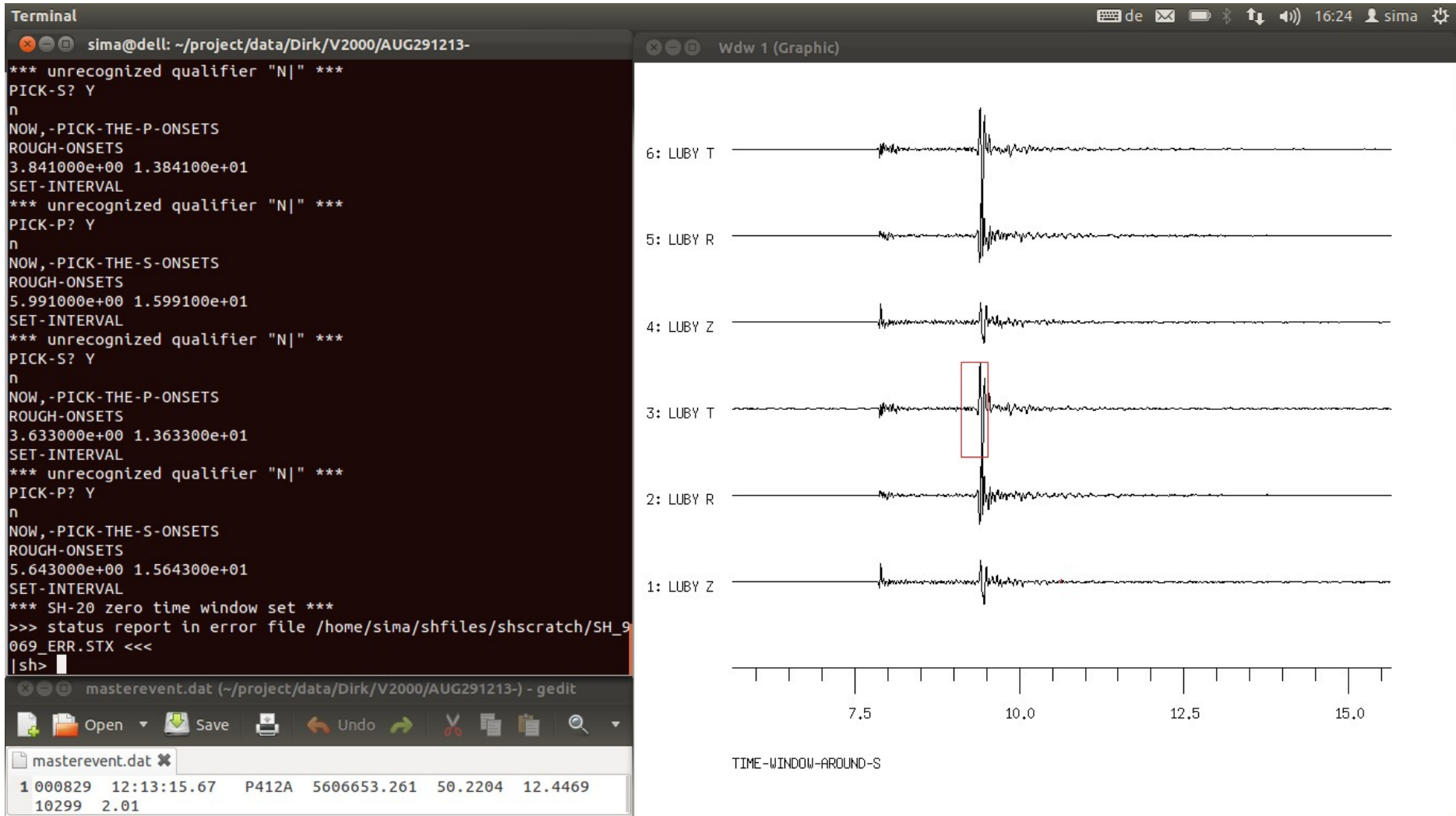
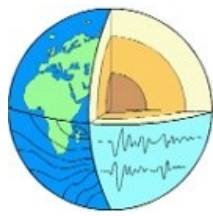
Terminal

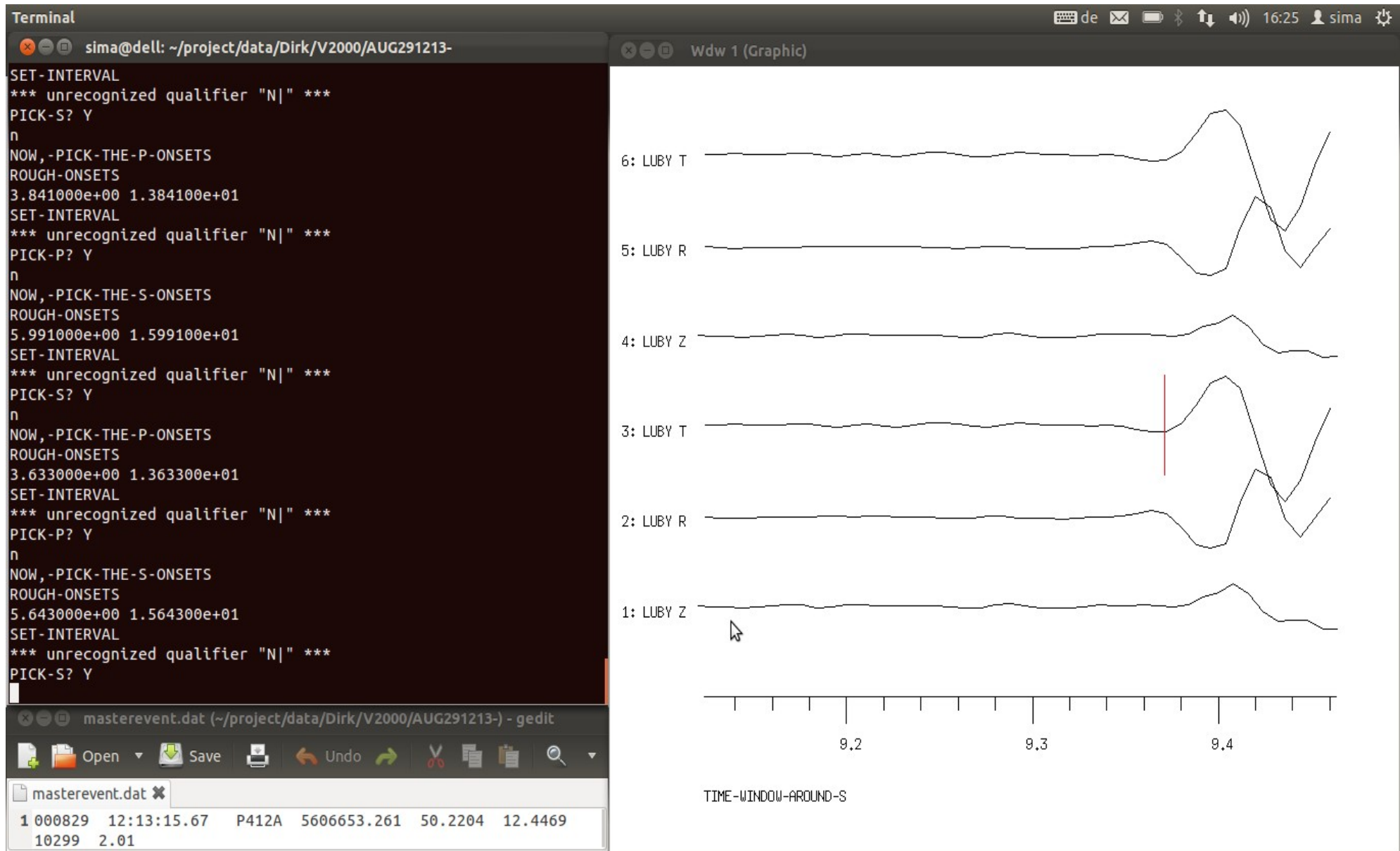
sima@dell: ~/project/data/Dirk/V2000/AUG291213-

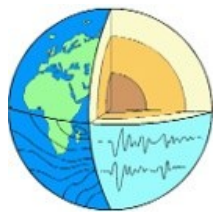
```
SET-INTERVAL
*** unrecognized qualifier "N|" ***
PICK-S? Y
n
NOW,-PICK-THE-P-ONSETS
ROUGH-ONSETS
8.102000e+00 1.810200e+01
SET-INTERVAL
*** unrecognized qualifier "N|" ***
PICK-P? Y
n
NOW,-PICK-THE-S-ONSETS
ROUGH-ONSETS
1.023100e+01 2.023100e+01
SET-INTERVAL
*** unrecognized qualifier "N|" ***
PICK-S? Y
n
NOW,-PICK-THE-P-ONSETS
ROUGH-ONSETS
3.852000e+00 1.385200e+01
SET-INTERVAL
*** unrecognized qualifier "N|" ***
PICK-P? Y
n
NOW,-PICK-THE-S-ONSETS
ROUGH-ONSETS
6.010000e+00 1.601000e+01
SET-INTERVAL
*** unrecognized qualifier "N|" ***
PICK-S? Y
n
NOW,-PICK-THE-P-ONSETS
ROUGH-ONSETS
3.575000e+00 1.357500e+01
SET-INTERVAL
*** unrecognized qualifier "N|" ***
PICK-P? Y
```

Wdw 1 (Graphic)









Output file

29-AUG-2000_12:13:15.670 12.4469 50.2204 10.2

WERN P 2.390000e+00 2.393000e+00 2.388000e+00 Y

WERN S 4.099000e+00 4.100000e+00 4.095000e+00

VACK P 2.238000e+00 2.242000e+00 2.235000e+00 Q

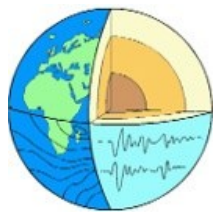
VACK S 4.000000e+00 4.004000e+00 3.993000e+00

LUBY P 2.183000e+00 2.185000e+00 2.180000e+00 Y

LUBY S 3.677000e+00 3.680000e+00 3.675000e+00

POCA P 2.667000e+00 2.669000e+00 2.661000e+00 Q

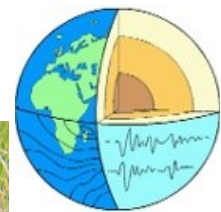
POCA S 4.507000e+00 4.511000e+00 4.503000e+00



Results of picking in next stages

Stage 2 & 3 : Seismic Tomography

Hypocenter location by VELEST & SIMUL2000



Thanks for your attention

